

# **RFM CUSTOMER SEGMENTATION ANALYSIS**

*An Insight-Driven Customer Profiling Report*

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# **CUSTOMER BEHAVIOR SEGMENTATION**

# EXECUTIVE SUMMARY

**This project aims to segment customers using RFM (Recency, Frequency, Monetary) analysis to enhance targeted marketing and customer retention strategies.**

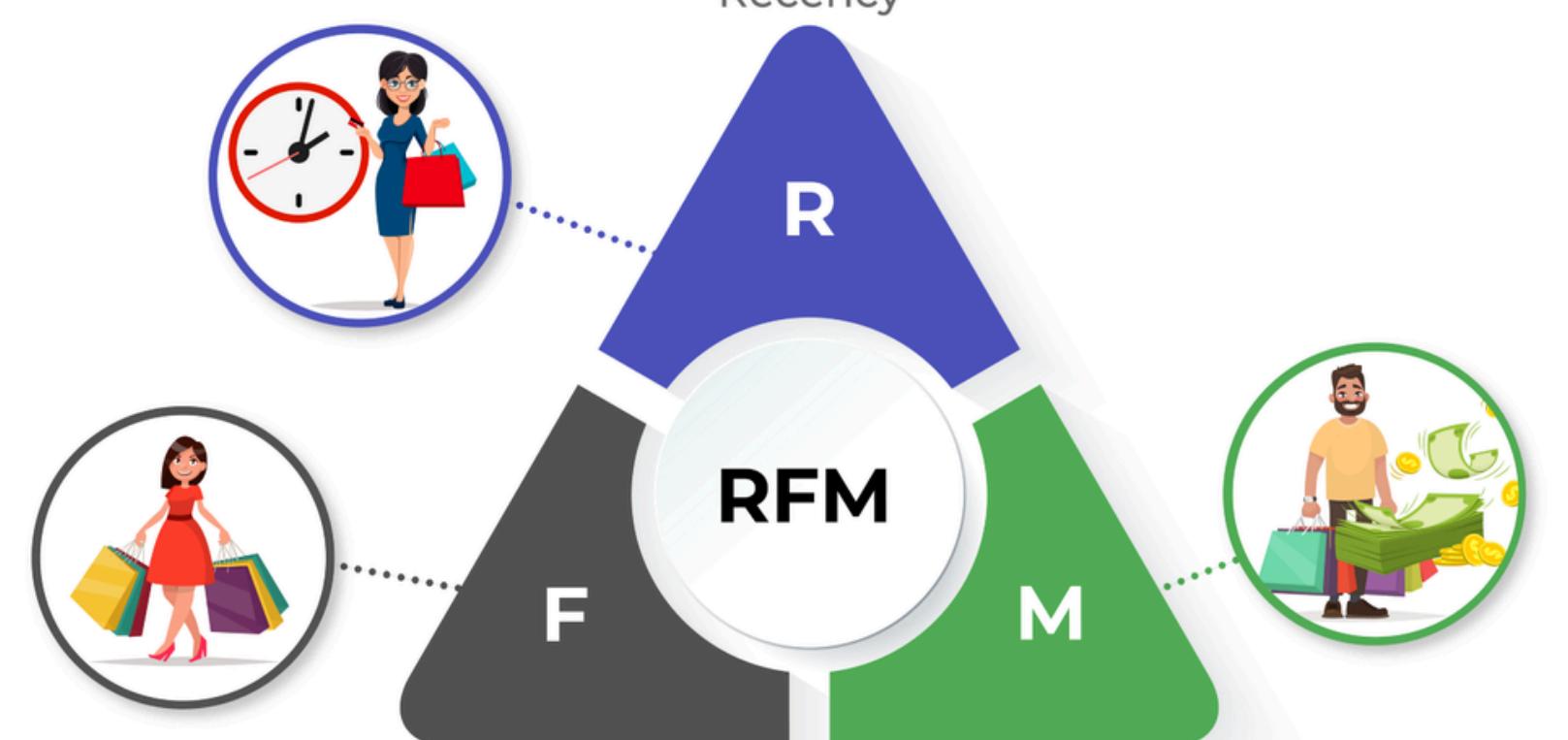
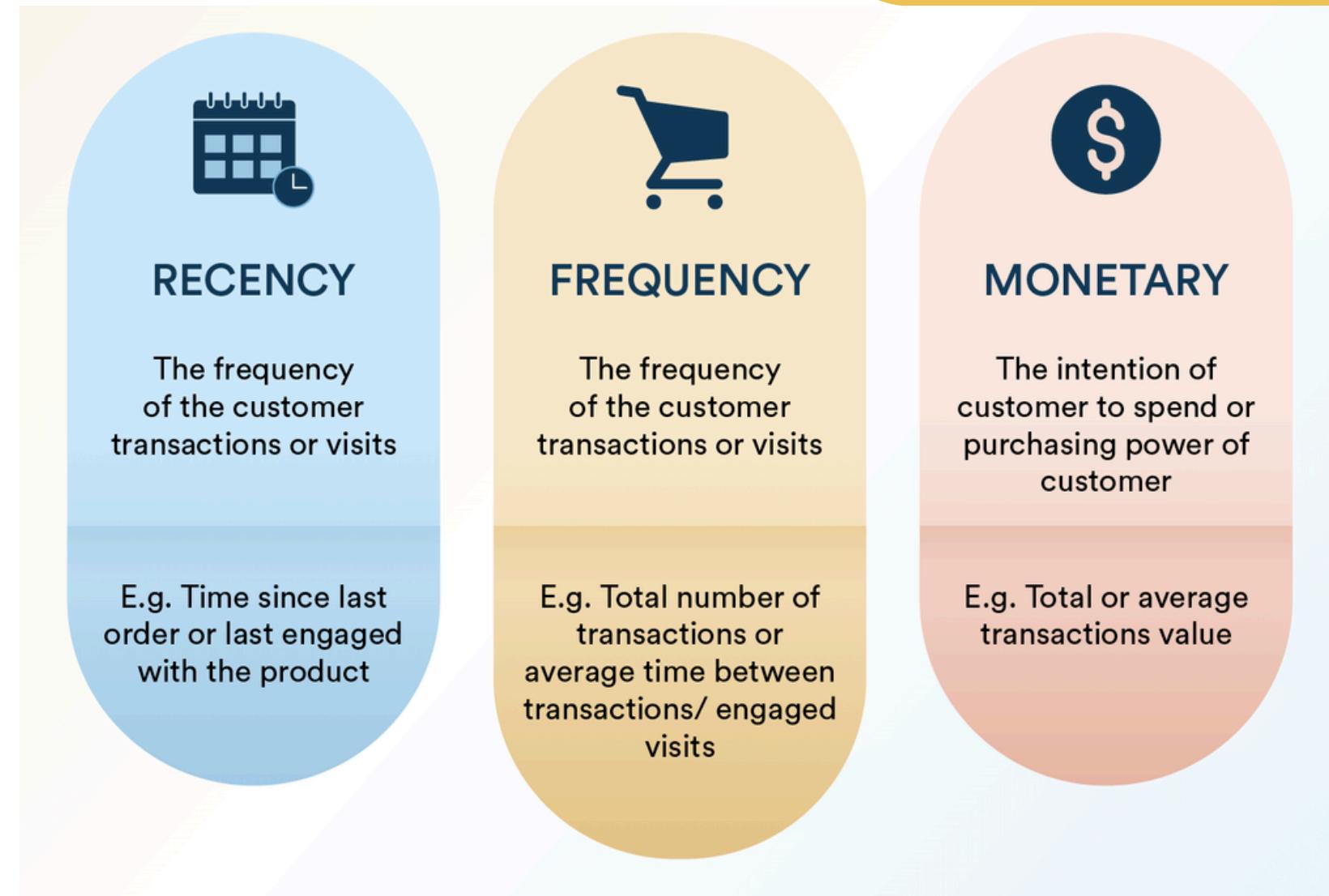
**The dataset comprises historical transaction data, which was cleaned, transformed, and analyzed in Power BI.**

**Customers were scored on a 1–5 scale across Recency, Frequency, and Monetary metrics.**

**Based on aggregated RFM scores, we identified key customer segments: Champions, Loyal Customers, Potential Loyalists, At Risk, and Lost.**

**Power BI dashboards visualize customer distribution, spending trends, and engagement levels for each segment.**

**Actionable recommendations were derived for each segment to optimize engagement, improve retention, and maximize revenue.**



# **Business Objectives**

**Leveraging RFM Analysis to Drive Strategic Customer Engagement**

*This project aims to identify and segment customers based on purchasing behavior—Recency, Frequency, and Monetary value—to enable targeted marketing strategies and optimized resource allocation. By focusing on high-value segments, the initiative seeks to enhance customer retention, boost lifetime value, and empower data-driven decision-making through actionable customer insights.*

## [1] Data Collection



## [2] Data Cleaning & Preparation

- Remove nulls, cancelled invoices
- Calculate TotalPrice



## [3] RFM Metric Calculation

- Recency, Frequency, Monetary



## [4] RFM Scoring

- Quintile-based scoring (1-5 scale)



## [5] Customer Segmentation

- Best, Loyal, At-Risk, etc.



## [6] Power BI Dashboard Creation

- RFM histograms, segment insights



## [7] Business Insights & Recommendations

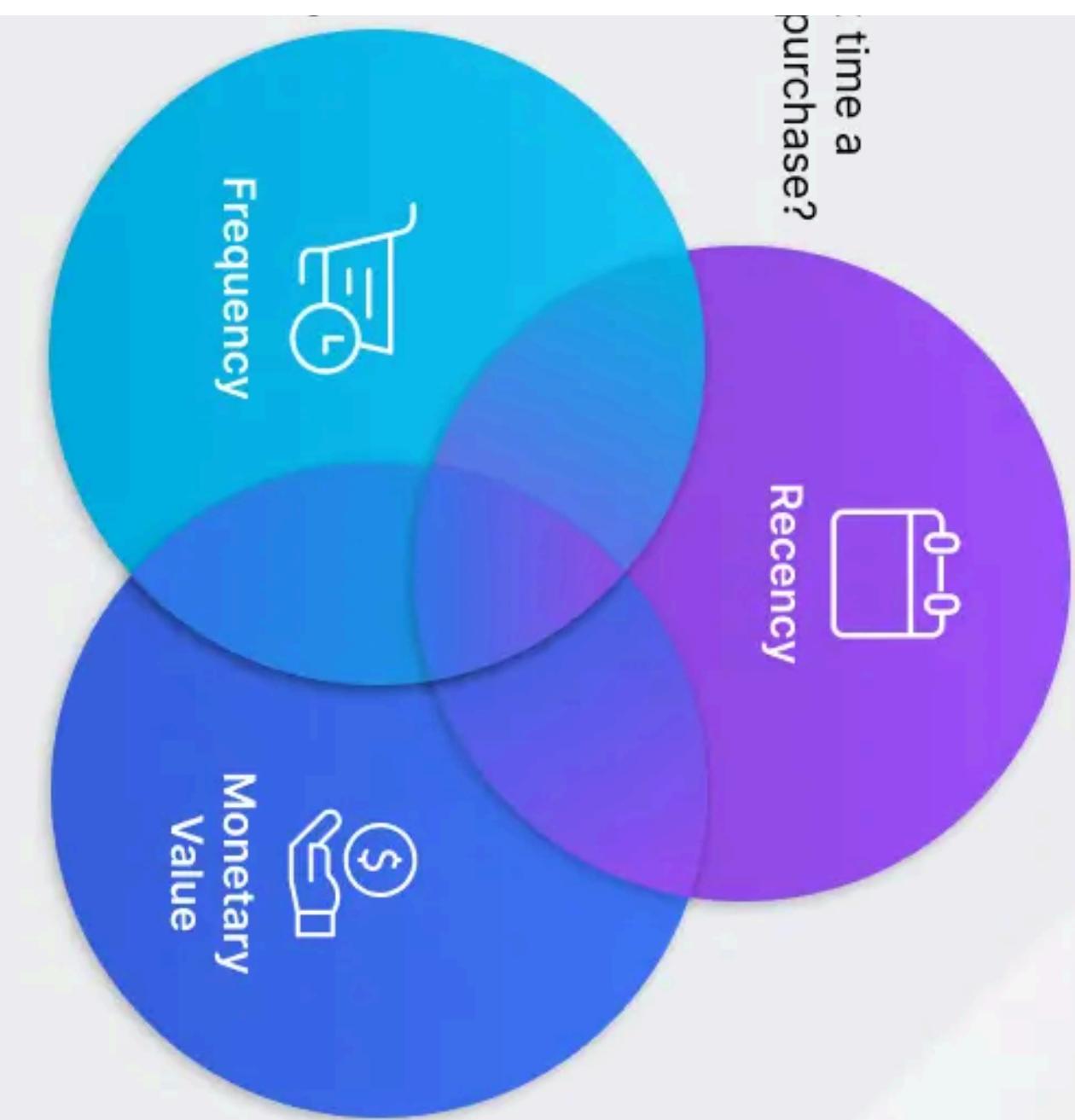
- Targeted strategies per segment

# *Data Cleaning & Analysis (NumPy & Pandas)*

Steps	Description
<i>Remove Duplicates</i>	Used drop_duplicates() to eliminate redundant rows from transactional data.
<i>Handle Null Values</i>	Removed rows with missing CustomerID using dropna().
<i>Strip Blank Spaces</i>	Cleaned string fields like Description using .str.strip().
<i>Remove Cancellations</i>	Filtered out invoices starting with 'C' (cancelled) using InvoiceNo.str.startswith('C').
<i>Calculate Total Price</i>	Created new column: TotalPrice = Quantity × UnitPrice.
<i>Data Type Conversion</i>	Converted InvoiceDate to datetime, CustomerID to str.

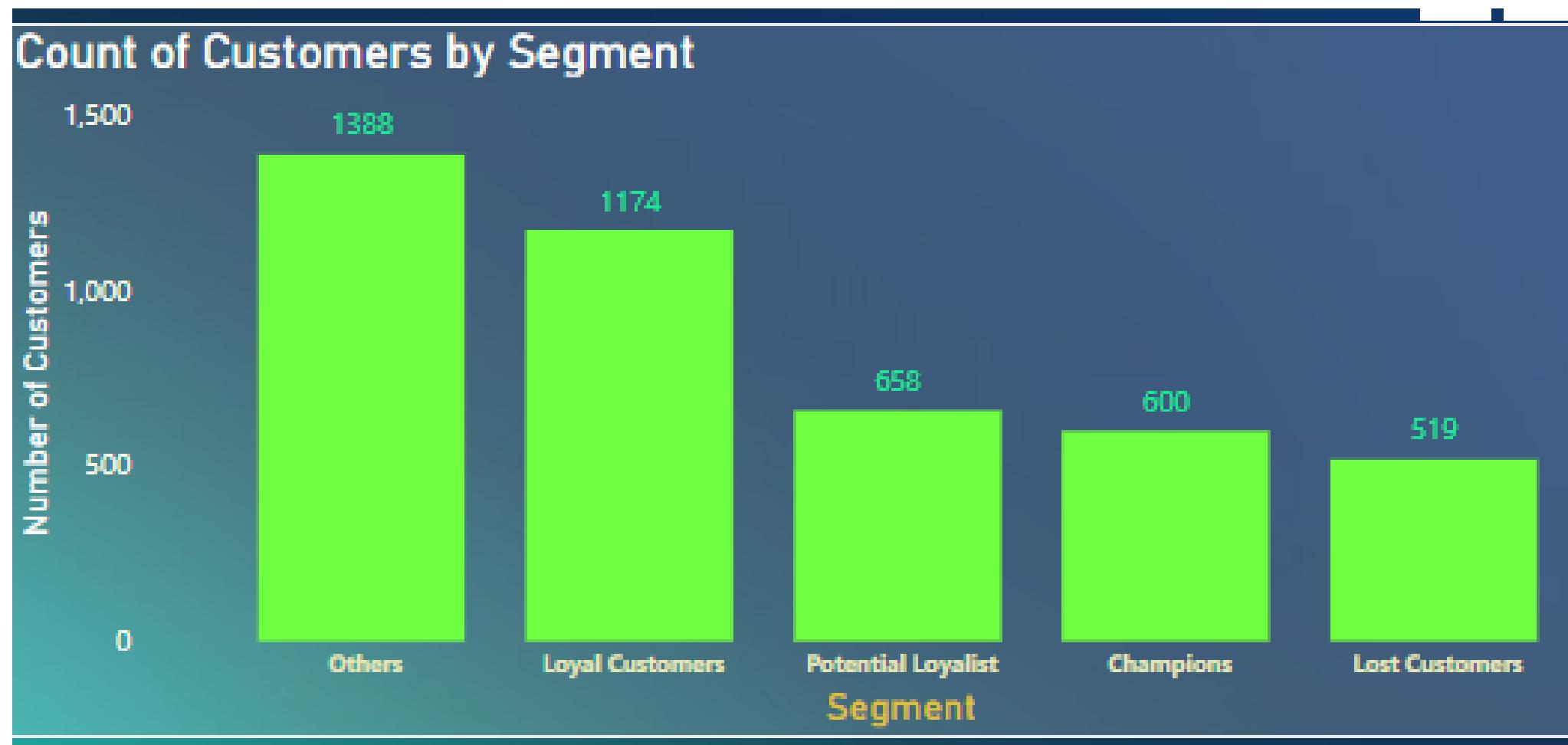
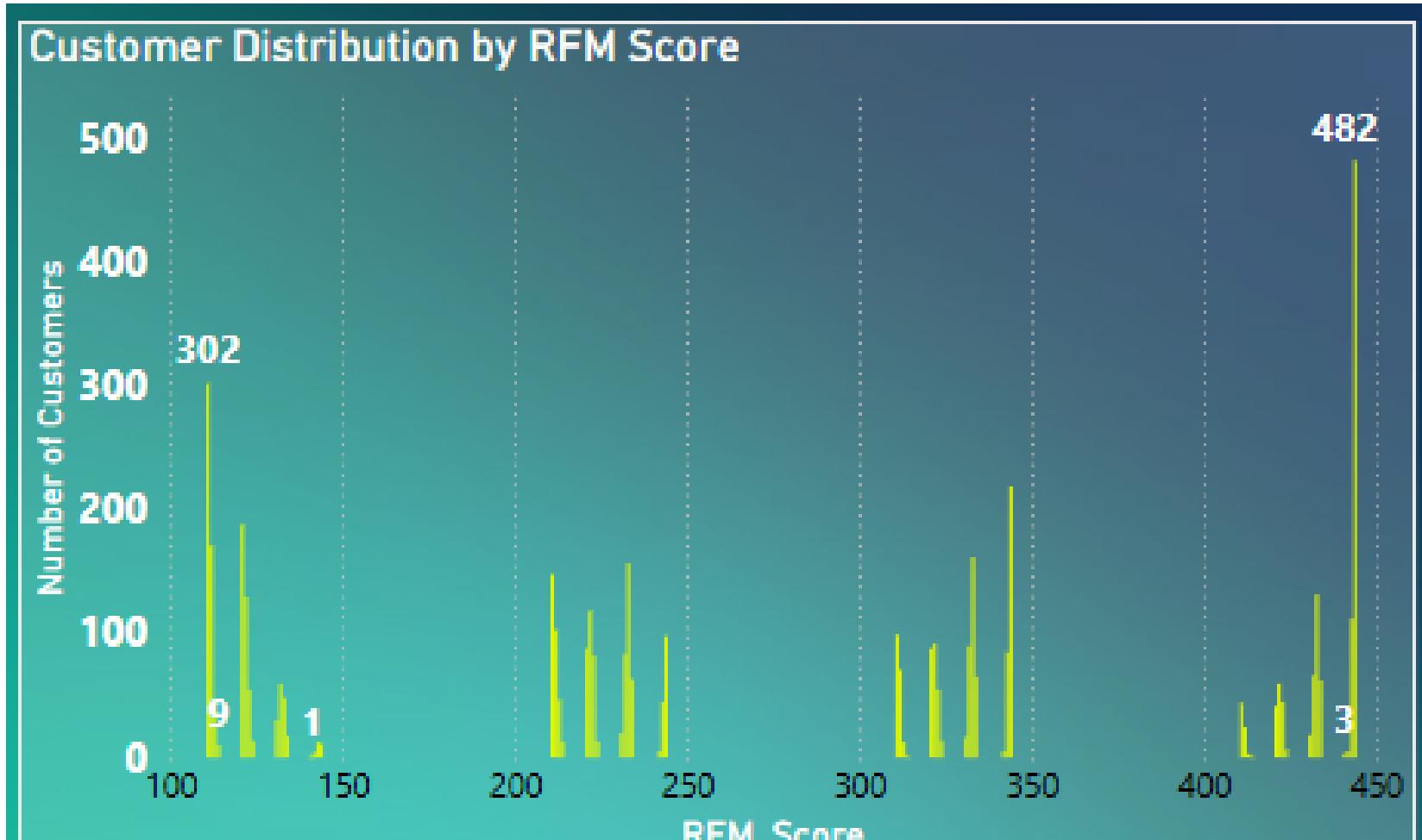
# RFM Analysis

Steps	Description
1. Recency Calculation	Calculated as the number of days since a customer's last purchase. Formula: LatestDate - LastPurchaseDate
2. Frequency Calculation	Counted the number of unique transactions (InvoiceNo) per customer.
3. Monetary Value Calculation	Summed the total revenue (TotalPrice) per customer.
4. RFM Scoring	Each metric was scored on a scale of 1 (lowest) to 5 (highest) using quintiles.
5. Segment Assignment	Combined RFM scores (e.g., 555, 532) to categorize customers into segments like: Best, Loyal, At Risk, Hibernating.



# Power BI Visualizations and Business Insights

Visualization	Description	Business Insight
Customer Segmentation by RFM (Bar Chart)	Visual representation of customer groups like Champions, Loyal, At-Risk, etc., based on RFM scores.	Most customers are "Loyal" and "Potential Loyalists," ideal for targeted retention and loyalty programs.
Count of Customers by Segment (Bar Chart)	Displays number of customers in each RFM segment.	Helps identify which segments hold majority of the customer base for tailored engagement.



## Segment-wise Revenue Contribution (Donut Chart)

Illustrates total revenue contribution from each RFM segment.

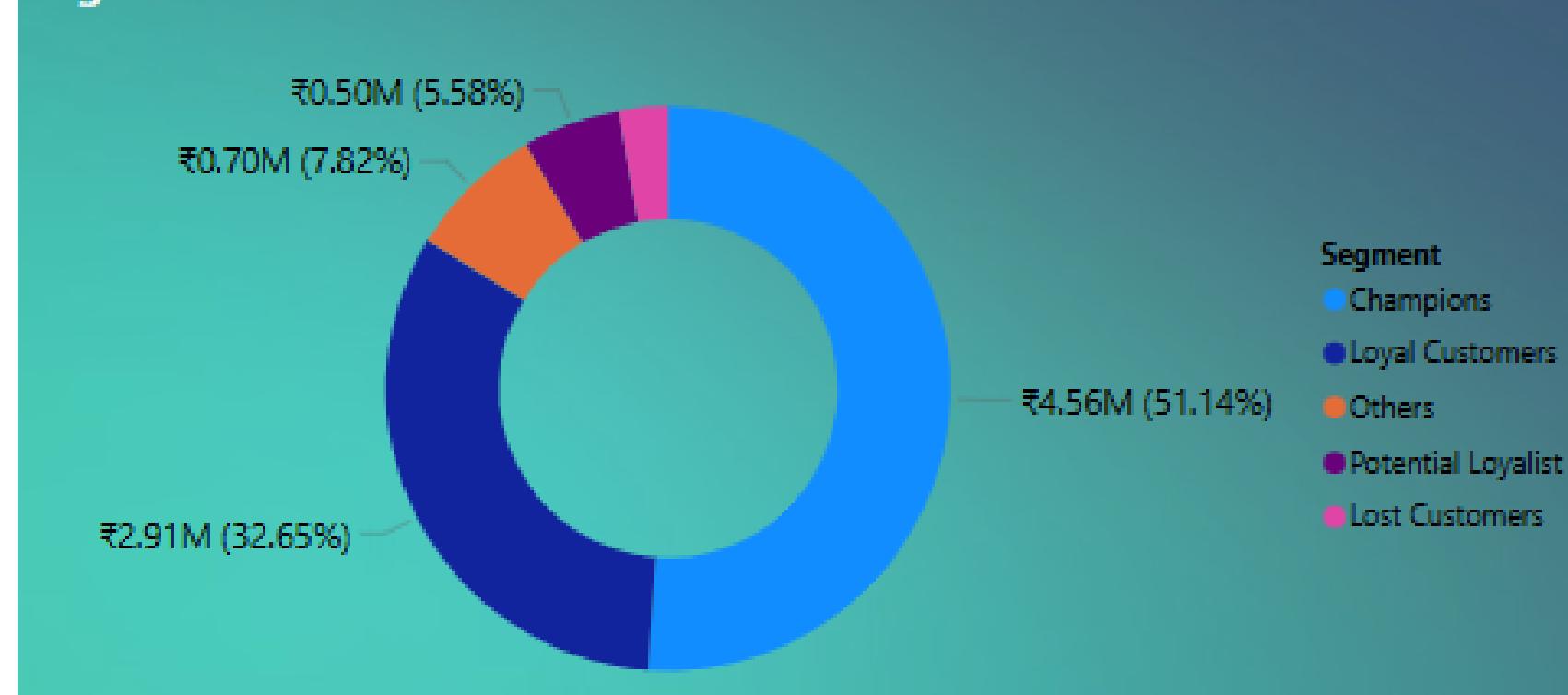
"Champions" segment drives highest revenue; resource allocation should favor this segment.

## Average Order Value by Segment (Bar Chart)

Shows average monetary value of transactions across RFM segments.

"Loyal" and "Champions" spend more per order; promotions and upselling can be more effective here.

Segment-wise Revenue Contribution



Average Order Value by Segment





Item 2  
25%



# Conclusion and Strategic Business Insights

	Insight	Description
	Customer Segmentation	RFM model enabled targeted segmentation: Champions, Loyal, At Risk, etc.
	Actionable Targeting	High-value customers can be prioritized for retention and engagement.
	Retention Opportunity	Identified "At Risk" and "Hibernating" groups for re-engagement.
	Revenue Focus	Segment-wise revenue analysis shows where business value is generated.
	Data-Driven Strategy	Power BI visualizations support informed decision-making across teams.
	Future Readiness	RFM segmentation is scalable and adaptable to ongoing customer analytics.

